

SUPPORTING INFORMATION

Corrosion inhibition of mild steel in 1 M HCl by D-glucose derivatives of dihydropyrido [2,3-d:6,5-d'] dipyrimidine-2, 4, 6, 8(1H,3H, 5H,7H)-tetraone

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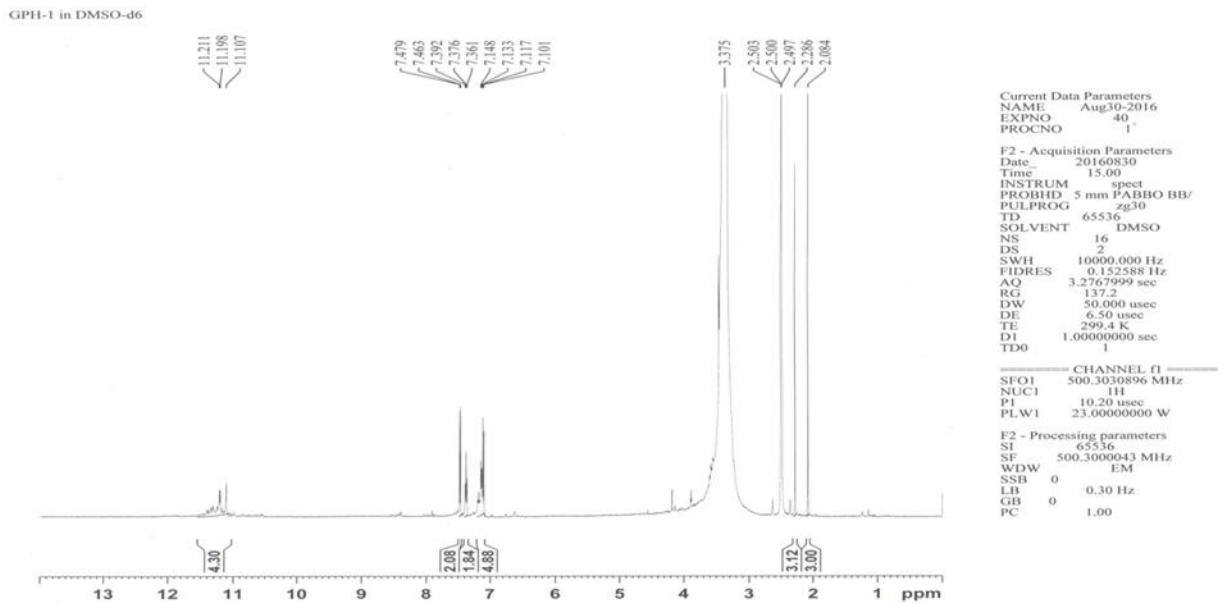
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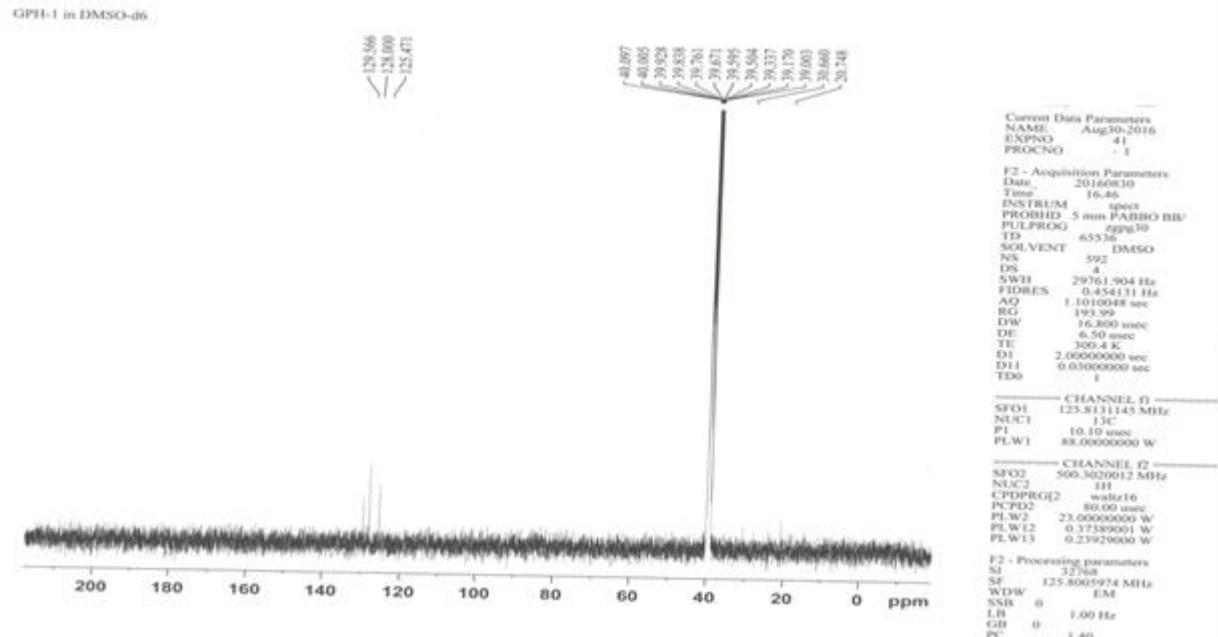
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5-((1S,2R,3R,4R)-1,2,3,4,5-pentahydroxy-pentyl)-10-phenyl-9,10-dihydropyrido[2,3-d:6,5-d']dipyrimidine-2,4,6,8 (1H,3H,5H,7H)-tetraone (GPH-1**):**

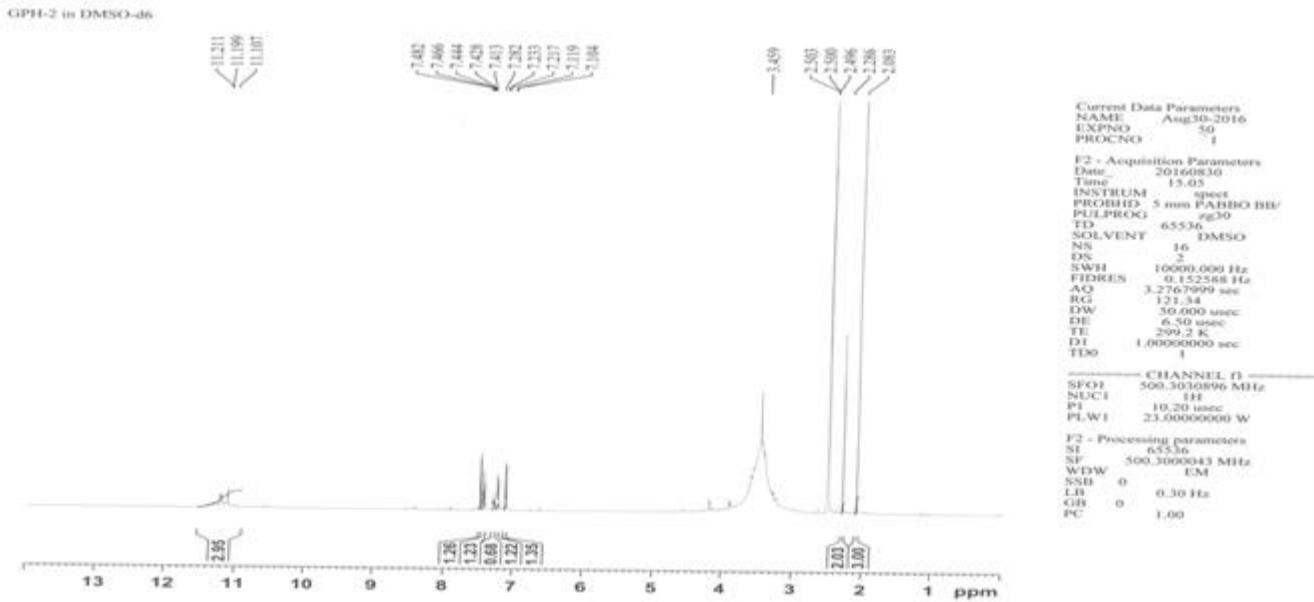


^1H NMR

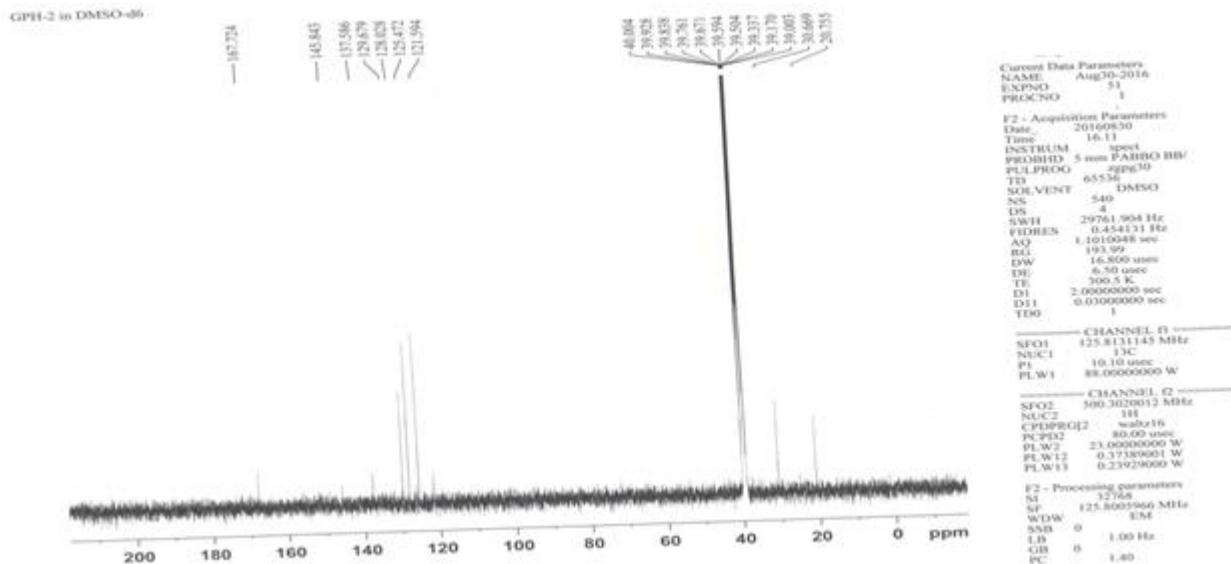


13C NMR

10-(4-hydroxyphenyl)-5-((1*S*,2*R*,3*R*,4*R*)-1,2,3,4,5-pentahydroxy pentyl)-9,10-dihydro pyrido[2,3-*d*:6,5-*d'*] dipyrimidine-2,4,6,8 (1*H*,3*H*,5*H*,7*H*)-tetraone (**GPH-2**)

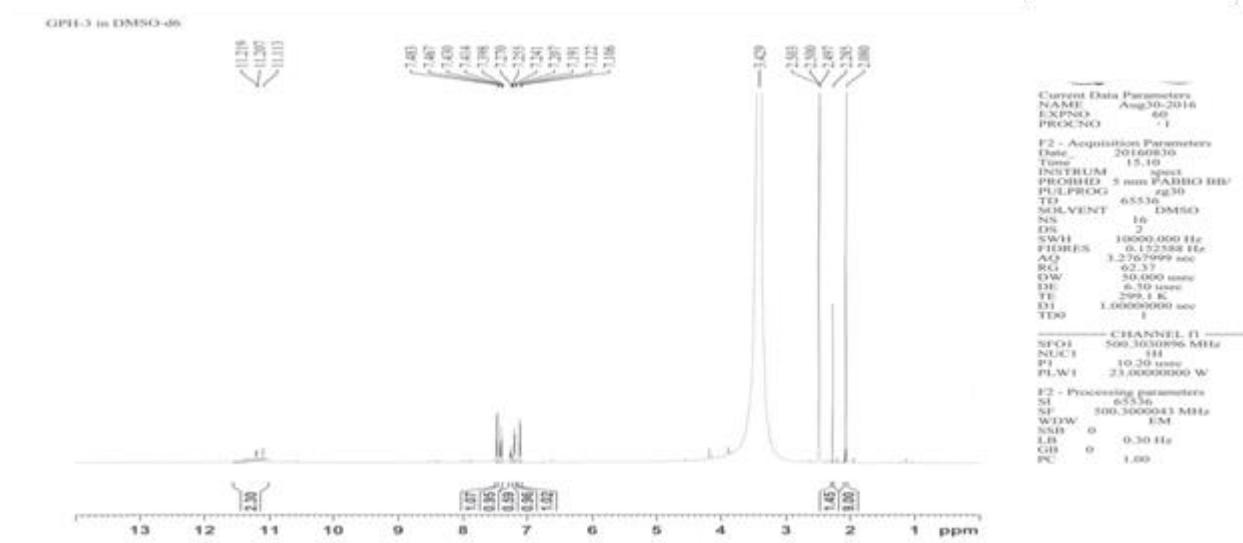


^1H NMR

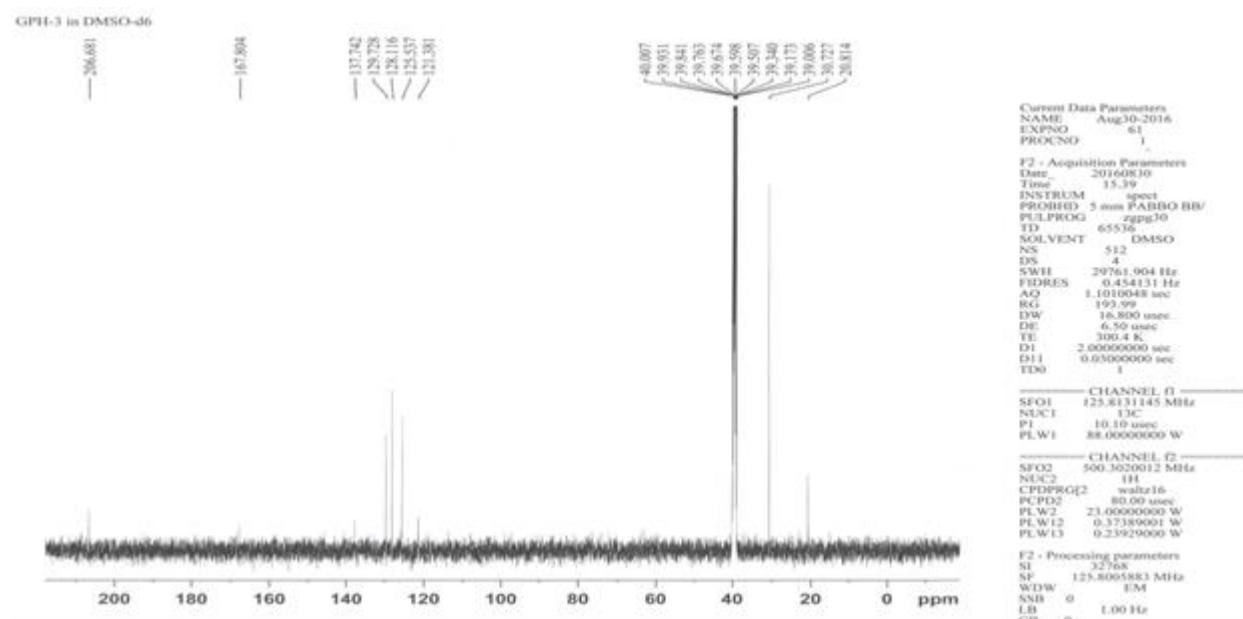


13C NMR

10-(4-(methoxyphenyl)-5-((1*S*,2*R*,3*R*,4*R*)-1,2,3,4,5-pentahydroxy pentyl) -9,10-dihydro pyrido[2,3-*d*:6,5-*d'*]dipyrimidine-2,4,6,8(1*H*,3*H*,5*H*,7*H*)-tetraone (**GPH-3**)



1H NMR



13C NMR

Fig. S1: ^1H and ^{13}C NMR spectra of synthesized compounds

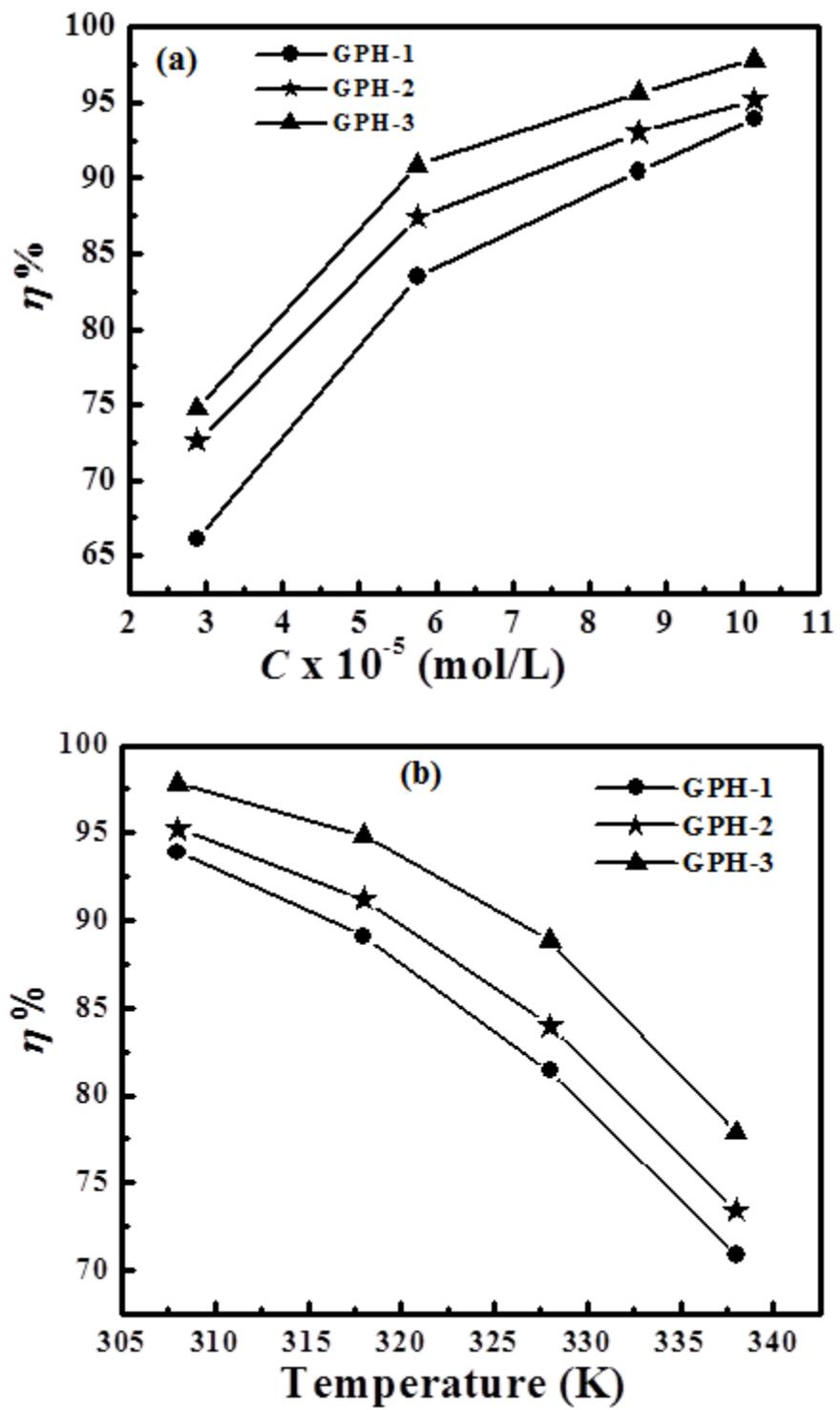


Fig. S2a-b: (a): Variation of inhibition efficiency with inhibitors concentrations
(b) Variation of inhibition efficiency with solution temperatures

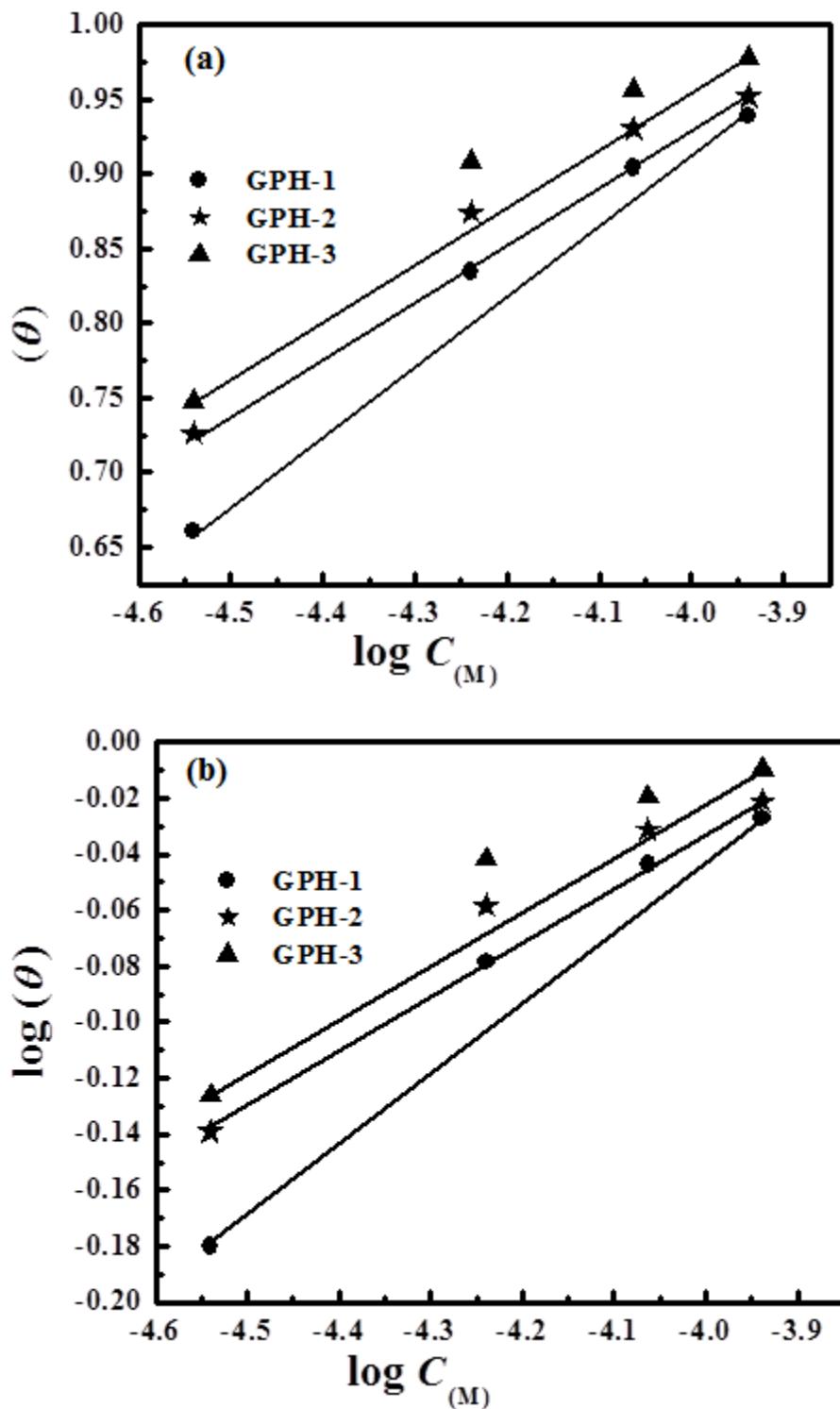


Fig. S3: (a) Temkin and (b) Freundlich adsorption isotherm plots for the corrosion of mild steel in 1 M HCl without and with the inhibitors.

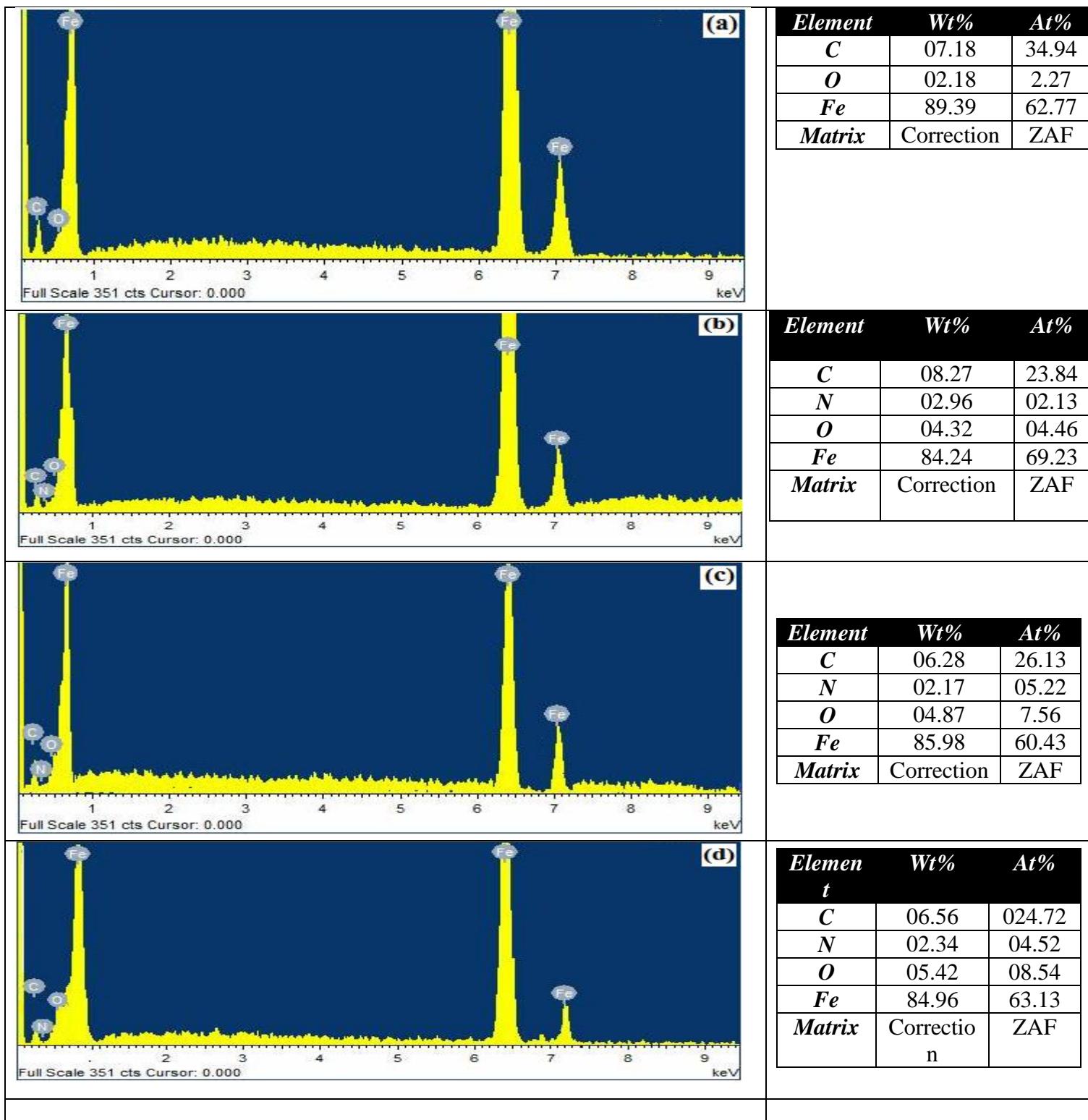


Figure S4: EDX spectra and corresponding elemental

Table S1: Slopes, intercepts, and regression coefficients (R^2) for Langmuir and Temkin adsorption isotherms plots for investigated inhibitors

Inhibitor	Langmuir adsorption			Temkin adsorption isotherm			Freundlich isotherm		
	isotherm			slope	intercept	(R^2)	slope	intercept	(R^2)
GPH-1	1.4831	7.0108	0.9978	0.4696	2.8047	0.9806	0.258	1.0000	0.9678
GPH-2	1.4639	7.0636	0.9990	0.3843	2.4829	0.9700	0.2002	0.7774	0.9594
GPH-3	1.9318	9.2202	0.9947	0.3897	2.5328	0.9549	0.1974	0.7791	0.9430

Table S2: Values of slope, intercept, correlation coefficient and phase angle calculated from Bode plots of the in absence and presence of studied compounds

inhibitors	Slope	Intercept	Correlation	Phase angle
	Decades/Decade	(kohm)	coefficient (R ²)	
Blank	-0.4805	0.0926	-0.99841	-41.3
GPH-1	-0.7193	0.4389	0.99941	-58.6
	-0.7507	0.8091	-0.99976	-61.9
	-0.7739	0.2002	-0.99984	-68.4
	-0.7838	0.1095	-0.9998	-69.5
GPH-2	-0.7721	0.7736	-0.99908	-64.3
	-0.7434	0.8921	-0.99960	-64.5
	-0.7664	1.1804	0.99989	-65.7
	-0.7921	1.6581	-0.99978	-68.6
GPH-3	-0.6775	0.7774	-0.99827	-58.9
	-0.7668	0.5279	0.99980	-63.4
	-0.7760	0.5590	0.99945	-66.2
	-0.7713	1.1243	0.99941	-67.8